

CARDIGAN TIDAL FLOOD RISK MANAGEMENT SCHEME

Volume 1: Environmental Statement Chapter 9 – Traffic and Transport

Client's project no. CE0587

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9. Traffic and Transport

9.1 Introduction

This chapter assesses the likely significant effects from the construction of the Scheme, with respect to Traffic and Transport. This chapter details the baseline environment, assessment of likely significant effects, and where necessary, mitigation measures to avoid, reduce or minimise significant effects are proposed.

This chapter should be read in conjunction with the topic chapters outlined below due to potential interactions between topics. It should also be read along with the outline Construction Traffic Management Plan (oCTMP):

- Chapter 5: Population and Human Health

9.2 Competent expert evidence

This chapter has been completed by SCP Transport Planning (part of the RSK Group) a well-respected transport planning and infrastructure design team that have substantial experience in developing environmental statements in relation to traffic and transport.

Summaries of the qualifications and experience of the chapter authors are set out in Table 9-1.

Table 9-1 - Competent experts

Author/checker/reviewer	Qualification/professional membership	Years of experience
Jacob Clegg	GradCIHT	2 years
Ciaran Conlon	MCIHT	3 years
William Tong	MCIHT	7 years
Ian Wickett	FCIHT	20 years

9.3 Planning policy and legislative context

This section describes the relevant legislation, policy and guidance that has been considered in developing the Scheme design, and in the assessment of effects with respect to this chapter. This legislation, policy and guidance have been reviewed and where applicable has informed the assessment through the identification and categorisation of sensitive receptors, requirements for mitigation, and the scope and/or method of assessment.

9.3.1 International and National Policy

Planning Policy Wales (PPW) (Welsh Government, 2020)

The Planning Policy Wales (PPW), together with supplementary Technical Advice Notes (TANs), sets out the national planning policy framework for Wales, with the primary objective of ensuring that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental, and cultural well-being of Wales.

This ES has been prepared in accordance with policies outlined in the above, with additional documentation such as the oCTMP outlining measures taken to minimise the environmental impact of the Scheme.

Technical Advice Note 18: Transport (Welsh Government, 2007)

TAN 18 is a supplementary document to the PPW and presents advice on land use integration, development location, parking, design, sustainable travel, and impact assessment.

This ES has been prepared in accordance with Section 9 of the document, 'Assessing Impacts and Managing Implementation'.

Welsh Transport Appraisal Guidance (Welsh Government, 2024)

The Welsh Transport Appraisal Guidance (WeITAG) sets out guidance on planning and appraisal for transport. It outlines that infrastructure projects should align with sustainability, well-being, and climate objectives, and the role of impact assessments in determining this.

This ES has been prepared in accordance with WeITAG guidance, with likely significant effects on the environment assessed in Section 9.9.

9.3.2 Local Policy

Ceredigion Local Development Plan

The Ceredigion Local Development Plan (LDP1) was adopted by Ceredigion County Council in 2013, and outlines policies supporting Ceredigion County Council's ambitions to promote sustainable development in Ceredigion.

This ES has been prepared in accordance with the vision and objectives outlined in the document.

Cardigan Place Plan

The Cardigan Place Plan was adopted by Ceredigion County Council in 2024, and outlines the vision and strategy for continued development in Cardigan. Key themes outlined in the document include well-being of residents and the local environment.

This ES takes the above into account and contains assessment on likely significant effects on the environment in Section 9.9. Accompanying documents, such as the oCTMP, introduce measures to minimise any potential impacts.

Active Travel (Wales) Act 2013

The Active Travel Act 2013 for Wales required Ceredigion County Council to produce an Integrated Network Map setting out a 15-year programme of improvements to active travel routes.

Improvements to cycling and walking routes were subject to public consultation in the active travel designated localities of Aberystwyth, Cardigan and Lampeter. The Integrated Network Maps were submitted to the Welsh Government in November 2017 and approved in February 2018.

The ES takes the above improvements into account through accompanying documents such as the oCTMP which seeks to minimise impacts to local communities and other road users. It is noted however that the routes are only aspirational at this stage.

9.4 Assessment guidance

The following guidance documents were used in this assessment, as described in the Methodology (Section 9.7):

- Environmental Assessment of Traffic and Movement (IEMA, 2023)

9.5 Consultation

An EIA Scoping Opinion was provided by the Local Planning Authority in December 2023. An update to that Scoping Opinion was provided on the 16th October 2025. This outlined that the proposed methodology was appropriate and that the ES should include:

- A Transport Assessment covering the County Road network and A487.
- A Construction Site and Traffic Management Plan.
- Details of on-site parking and materials compound.
- A pre-condition survey of minor County Roads to be used to access the riverside site, with any damage to be repaired at the developer's expense.

No further specific consultation has taken place with respect to Traffic and Transport.

9.6 Scoping Assessment

The scope of this assessment has been established throughout the EIA process and design of the Scheme.

This section provides an evidence base for scoping matters in or out following further iterative assessment. Table 9-2 outlines the receptors/matters that have been scoped in or out of the assessment.

The Scoping Opinion provided by the Local Planning Authority in December 2023 and October 2025 has scoped out the need for an assessment of the operational phase of the Scheme.

Table 9-2 - Receptors Scoped in or out of Further Assessment

Receptor/Matter	Phase	Scoped in or out	Justification
A487	Construction	Scoped in	During the construction phase, traffic would be generated by a range of activities including: - Construction staff arriving and leaving the compounds - Supply of construction materials and plant associated with the establishment of the
Pont-Y-Cleifion	Construction	Scoped in	
Morgan Street	Construction	Scoped in	
Carrier's Lane	Construction	Scoped in	
Strand	Construction	Scoped in	

Receptor/Matter	Phase	Scoped in or out	Justification
Station Road	Construction	Scoped in	compounds and the main construction works
B4546	Construction	Scoped in	Construction traffic has the potential to affect severance, driver delay, pedestrian delay, non-motorised user amenity, fear and intimidation and road user safety along the links/receptors outlined.
All road users	Operation	Scoped out	Once the Scheme is operational, the effect on the local road system is expected to be minimal for maintenance purposes. Access to the Scheme would utilise the same access junctions used for the construction phase.

9.7 Methodology

9.7.1 Assessment methodology and criteria

The relevant elements for the ES in terms of assessment transport and traffic impact are the magnitude and significance of consequences on the assessed links within the study area as a result of the additional trips during the construction phase of the Scheme.

The significance of an effect is determined based on the magnitude of change and the deemed sensitivity of the affected receptor. This section describes the criteria applied in this chapter to sensitivity of receptors and magnitude of potential impacts of Scheme traffic.

The Institute of Environmental Management and Assessment (IEMA) provides the traffic and transport assessor with the necessary framework for assessment (IEMA, 2023). The Environmental Assessment of Traffic and Movement (IEMA, 2023) guidance (hereafter referred to as the 'IEMA Guidance') has been used in this assessment. Note, while IEMA is now known as the Institute of Sustainability and Environment Professionals (ISEP), since the IEMA Guidance was published under the IEMA name, it will continue to be referred to as such.

The impacts assessed as part of the traffic and transport assessment are as follows:

- (i) **Severance of communities:** Severance is the perceived division that can occur within a residential area if it becomes separated by a major traffic artery and is used to describe the factors that separate people from other people and places. For example, severance may be affected as a result of an increase in traffic that could affect the difficulty of crossing a road. The effects of severance can be applied to motorists, pedestrians or residents.
- (ii) **Road vehicle driver and passenger delay:** Delays to existing traffic have the potential to occur at several locations within the local highway network as a result of the additional traffic that would be generated by the development. The IEMA Guidance

states that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.

- (iii) **Non-motorised user delay:** Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads and therefore increases in traffic levels are likely to lead to greater increases in delay. Delays are dependent upon the general level of pedestrian activity and general physical conditions of the crossing location. Given the range of local factors and conditions which can influence pedestrian delay, the IEMA Guidance does not recommend that thresholds be used as a means to establish the significance of pedestrian delay but recommends that reasoned judgements be made instead. However, the IEMA Guidance does note that, when existing traffic flows are low, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross a road.
- (iv) **Non-motorised user amenity:** This is broadly defined as the relative pleasantness of a journey, and is affected by traffic flow, traffic composition and pavement width/separation from traffic. The IEMA Guidance notes that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a positive effect and the latter to a negative effect.
- (v) **Fear and intimidation on and by road users:** The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its Heavy Goods Vehicle (HGV) composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths, as well as factors such as the speed and size of vehicles. There are no commonly agreed thresholds by which to determine the significance of this effect. However, the IEMA Guidance notes previous work that has been undertaken which puts forward thresholds that define the degree of hazard to pedestrians by average traffic flow, 18 hour/day heavy vehicle flow and average speed over an 18-hour day in miles per hour. The IEMA Guidance also notes that special consideration should be given to areas such as high-speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.
- (vi) **Road user and pedestrian safety:** Likely effects have the potential to arise where a proposed development is expected to produce a change in the character of the traffic on the local road network, for example as a result of increased HGV movements. The IEMA Guidance states that the implications of local circumstances or factors which may elevate or lessen risks of accidents, such as junction conflicts, would require assessment in order to determine the potential significance of accident risk.
- (vii) **Hazardous/large loads:** Some developments may involve the transportation of dangerous or hazardous loads by road. Such movements may involve specialist loads that might be involved in the construction phase of the Scheme.

The IEMA Guidance provides the assessor with two rules to be considered as screening thresholds when assessing the impact of development traffic on a highway link (IEMA, 2023), as follows:

- (a) **Rule 1:** Include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%)
- (b) **Rule 2:** Include highway links of high sensitivity where traffic flows have increased by 10% or more

Rule 1 and 2 have been used to determine the spatial scope of the traffic and transport assessment based on the geographical extent of the study area. It is considered that any increase in total traffic of less than 30% is imperceptible. Furthermore, forecast increases in total traffic of less than 10% result in no discernible environmental effect, hence the sensitivity threshold set in Rule 2.

On links where the forecast change in total traffic exceeds that which is outlined in Rule 1 or Rule 2 of the IEMA Guidance, a detailed assessment has been carried out based on the assessment criteria.

The levels of sensitivity for the assessment of receptors related to traffic and transport impacts have been outlined below and are based upon reasonable application of professional judgement and experience in line with the IEMA Guidance (IEMA, 2023). The study area has been assessed to establish the sensitivity of the highway links that would be used by traffic accessing and egressing the Scheme. The links are classified as having 'negligible', 'low', 'medium' or 'high' sensitivity depending on the nature of the roads and receptors present on these links. These thresholds are based on professional judgement and defined based on IEMA Guidance and are summarised below:

- (i) **High** – Receptors of high sensitivity to change in traffic flows; schools, colleges, playgrounds, collision clusters, retirement homes, and urban/residential, homes without footways that are used by pedestrians and cyclists.
- (ii) **Medium** - Receptors of medium sensitivity to change in traffic flows: congested junctions, doctor's surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycle ways, community centres, parks and recreation facilities.
- (iii) **Low** - Receptors with low sensitivity to change in traffic flows: places of worship, public open space, nature conservation areas, listed buildings, tourist/visitor attractions and residential areas with adequate footway provision.
- (iv) **Negligible** - Receptors with negligible sensitivity to change in traffic flows including motorways and dual carriageway and/or land uses sufficiently distant from affected routes and junctions.

Table 9-3 sets out the significance matrix used to determine significant effects. The shaded boxes indicate those significance ratings which are deemed to be 'significant' effects ('major' or 'moderate'). For this assessment, any effects with a significance level of 'minor' or less are considered to be not significant. It should also be noted that any impacts may be temporary (such as construction traffic) or permanent and effects may be positive or negative.

Table 9-3 - Significance of Effect Matrix

Sensitivity of Receptor	Magnitude of change			
	High	Medium	Low	Negligible
High	Major - Significant	Major - Significant	Moderate - Significant	Minor – Not Significant
Medium	Major - Significant	Moderate - Significant	Minor – Not Significant	Negligible – Not Significant
Low	Moderate - Significant	Minor – Not Significant	Negligible – Not Significant	Negligible – Not Significant

Sensitivity of Receptor	Magnitude of change			
	High	Medium	Low	Negligible
Negligible	Minor – Not Significant	Negligible – Not Significant	Negligible – Not Significant	Negligible – Not Significant

It is necessary to identify user groups ('receptors') and associated locations ('links'), which may be sensitive to changes in the transport and access network conditions. A sensitive area may be where pedestrian activity is high such as a school or town centre.

The IEMA Guidance sets out that particular user groups that may be sensitive to changes in traffic conditions should be identified as a starting point for the assessment of receptor sensitivity, these groups are:

- (a) Non-motorised users
- (b) Public Right of Way (PRoW) users
- (c) Motorists and freight vehicles
- (d) Public transport
- (e) Emergency services

The IEMA Guidance also set out a list of potentially sensitive receptor geographic locations. These sensitive locations and receptors within these locations have been considered and have informed the assessment of significance when traffic associated with the Scheme is assigned to the road network:

- (i) People at home
- (ii) People at work
- (iii) Sensitive and/or vulnerable groups (including young age, older age, income, health status, social disadvantage and access and geographic factors)
- (iv) Retail areas
- (v) Recreational areas
- (vi) Tourist attractions
- (vii) Collision clusters and routes with road safety concerns
- (viii) Junctions and highway links at (or over) capacity

For traffic and transport, the receptors are the users of the road, PRoW and communities through which construction traffic may travel.

The sensitivity of receptors has been identified for each link and has been completed through a desk-based review. In the absence of numerical thresholds and guidance to determine the sensitivity level of a receptor, the sensitivity of receptors has been identified using the assessor's professional judgement based on a range of factors including but not limited to density of properties along link, length of link and footpath provision.

Table 9-4 provides a more detailed criteria for the assessment of receptor sensitivity and sets out the different types of sensitive receptors relevant to traffic and transport.

Table 9-4 - Receptor sensitivity

Sensitive receptor	Built environment indicator	Receptor sensitivity
People at home	Residential properties	Negligible – No properties with direct frontage Low – Few properties (e.g. one side of the link) with direct highway frontage on construction traffic routes Medium – A number of properties with direct highway frontage (e.g. two sides of the link – low density) on construction traffic routes High – A large number of properties with direct frontage (e.g. two sides of the link – higher density)
People at work	Employment uses (Offices, industrial units etc)	Negligible/low – People are not negatively impacted when at work Medium – A number of people are negatively impacted when at work. High – A large number of people are negatively impacted when at work.
Sensitive and/or vulnerable groups	Disabled parking bays Retirement/care centres Playgrounds/Centres Schools	Negligible – No indication of sensitive groups present Low – At least one indicator of sensitive groups present, with direct highway frontage Medium – Low number of sensitive groups present, with direct highway frontage High – Multiple indicators of sensitive groups present, with direct highway frontage
Sensitive locations	Hospitals Schools Historic buildings Places of worship	Negligible – No indication of sensitive groups present Low – At least one indicator of sensitive groups present, with direct highway frontage Medium – Low number of sensitive groups present, with direct highway frontage

Sensitive receptor	Built environment indicator	Receptor sensitivity
		High – Multiple indicators of sensitive groups present, with direct highway frontage
Users walking	Crossing points PRoW Footways	Negligible – No indication of sensitive groups present Low – At least one indicator of sensitive groups present, with direct highway frontage Medium – Medium use by receptor group – footways present High – High receptor use with no footways
Users cycling/scooting	On/off road routes Designated routes or infrastructure	Negligible – No indication of sensitive groups present Low – At least one indicator of sensitive groups present e.g. off road cycle route Medium – On-road cycle route present with segregation High – On-road cycle route present with no segregation
Recreational areas	Parks Playground/areas Shopping and community centres	Negligible – No indication of sensitive groups present (unlikely usage) Low – At least one indicator of sensitive groups present Medium – Low number of sensitive groups present High – Multiple indicators of sensitive groups present e.g. children present
Road users	Road links/junctions Baseline traffic volume Existing signage/infrastructure	Presence of affected parties outlined in this table determine the sensitivity For driver delay assessment (motorists at junctions): Negligible: No indication of delay present (unlikely usage) Low: Less than 0.3 ratio of flow to capacity Medium: 0.3 to 0.5 ratio of flow to capacity

Sensitive receptor	Built environment indicator	Receptor sensitivity
		High: 0.5 to 0.85 ratio of flow to capacity

The sensitivity of receptors within the study area varies depending on where the study area road links travel through. Receptor sensitivity within residential areas where there are numerous direct frontage accesses to the road, for example, is generally considered to be medium or high, as the receptors may be less able to accommodate change.

9.7.2 Magnitude of change

Table 9-5 provides a summary of the magnitude thresholds adopted from the IEMA Guidance. The thresholds are only a starting point for the assessment and in the assessment of specific effects, are accompanied by a desktop review and professional judgement.

Table 9-5 - Magnitude of change

Impact	Magnitude of change			
	Negligible	Low	Medium	High
Severance	Changes in total traffic flow of less than 30%	Changes in total traffic flow of 30%-60%	Changes in total traffic flow of 60%-90%	Change in total traffic flow over 90%
Driver Delay	Vehicle delay changes are less than 30 seconds as a result of the Scheme	Vehicle delay changes are between 31 and 40 seconds as a result of the Scheme	Vehicle delay changes are between 41 and 60 seconds as a result of the Scheme	Vehicle delay changes are between 61 and 90 seconds as a result of the Scheme
Non-motorised user delay	Assessment of this effect is based on a desktop review of non-motorised user facilities on links and on the change in total traffic in construction			
Non-motorised user amenity	Assessment of this link is based on a desktop review of non-motorised user facilities on links used by construction traffic			
Fear and intimidation	No change in step changes	One step change in level with, with: <400 vehicle increase in average 18 hour all vehicle two-way flow and/or <500 heavy vehicle increase in	One step change in level with, with: >400 vehicle increase in average 18 hour all vehicle two-way flow and/or >500 heavy vehicle increase in	Two step changes in level

Impact	Magnitude of change			
	Negligible	Low	Medium	High
		total 18 hour heavy vehicle flow	total 18 hour heavy vehicle flow	
Hazardous/Large loads	<30% increase in traffic	Quantitative assessment of road capacity based on existing traffic flows and predicted future levels		

9.7.3 Definition of study area

The site is central to the town of Cardigan along the River Teifi (Afon Teifi) within the Ceredigion region of Wales. The Scheme would be constructed along the northern bank of the river, extending from Cardigan Bridge, continuing along Strand, and reaching Gloster Row car park.

The local highway network is characterised by a network of small local roads within the town, connecting onto the A487, the largest road within the local area. This is illustrated in Plate 9-1.

Table 9-6 provides high-level descriptions of the roads contained within the study area.

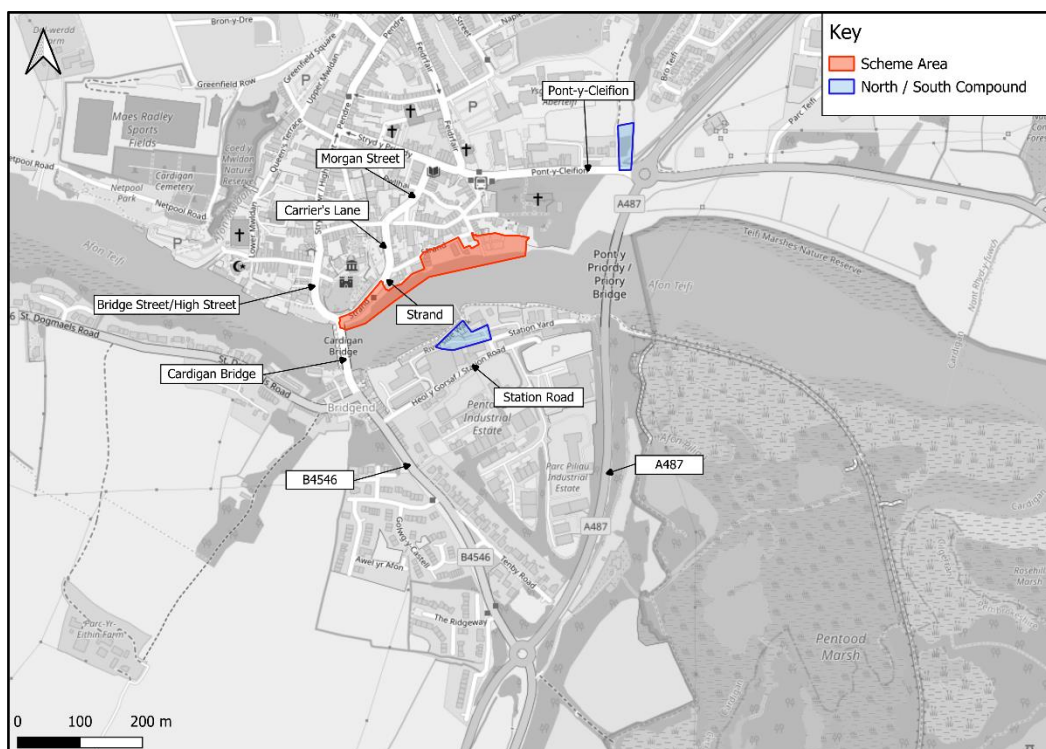


Plate 9-1 - Local road network

Table 9-6 - Study area road network

Road Name	Description
Strand	Strand is the main road within the site and is adjacent to the new flood defences. It is the primary access road to the site and where most construction work would take place. Strand is a one-way two-lane road that connects Carrier's Lane to Bridge Street/High Street and Cardigan Bridge (Castle Street) to reach the A487.
Carrier's Lane	Carrier's lane is a main access road to the site, and is a one-way single-lane road connecting southwards from Morgan Street onto Strand. To the northern extent of Carrier's Lane is the Carrier's Lane / Morgan Street / St Mary Street junction, facilitating vehicular access from the north-east of the town (via Morgan St) and from the High Street (via St Mary St). This road is also within the flood risk zone. There is on-street parking on the offside of the road.
Morgan Street	Morgan Street is a main access road to the site and is a one-way one-lane road connecting

Road Name	Description
	southwards from Priory Street/Pont-Y-Cleifion to Carrier's Lane.
Bridge Street/High Street	Bridge Street/High Street is a one-way single-lane road connecting northwards from Strand to the High Street/Priory Street junction.
Pont-Y-Cleifion	Pont-Y-Cleifion is a main access road to the site and is a two-way two-lane road connecting the A487 to Priory Street, St Mary Street, and Feidrfair.
A487	The A487 is the main road connecting the site and Cardigan to the surrounding area and regional road network and is a two-way two-lane road. To the north, it connects to regional destinations such as Aberystwyth. To the south it connects to destinations such as Fishguard. It is assumed that all HGV movements would use this road as it provides access to the site, and associated compounds, from the north and south.
B4546	The B4546 is a main egress road from the site, and is a two-way two-lane road connecting Strand/Cardigan Bridge (Castle Street) to the A487. It is anticipated that this road would be used by all vehicles egressing the site.

9.7.4 Traffic data

Existing traffic conditions

Annual traffic statistics on routes along the construction route have been extracted from the Department for Transport (DfT) traffic count point database (DfT, 2025) which provides an Annual Average Daily Traffic (AADT) value, based upon either manual counts, estimations using the previous year's manual count, or permanent Automatic Traffic Counters (ATCs). These are maintained by the local and Trunk Road authorities. The most recent traffic counts are from 2025.

For this study, traffic data was collected through 2 different sources:

- Department for Transport Traffic Counts
- Traffic Surveys (ATCs)

The purpose of this data is to ascertain baseline traffic levels on roads in the study area, in order to support the screening exercise undertaken in Section 1.8(a). The data sources are summarised in Table 9-7.

Table 9-7 - Traffic Surveys

Survey Type	Location	Date
Automatic Traffic Count – Traffic Sense	B4546	06/05/2025-12/05/25
	Carrier's Lane	06/05/2025-12/05/25
	Pont-Y-Cleifion	06/05/2025-12/05/25
	Station Road	06/05/2025-12/05/25
Automatic Traffic Count – Department for Transport	A487 (ID: 80260, south of A487/B4546 roundabout)	2024
	A487 (ID: 99777, between A487/Pont-Y-Cleifion roundabout and A487/B4546 roundabout)	2024
	A487 (ID: 99776, north of A487/Pont-Y-Cleifion roundabout)	2024

Road user safety

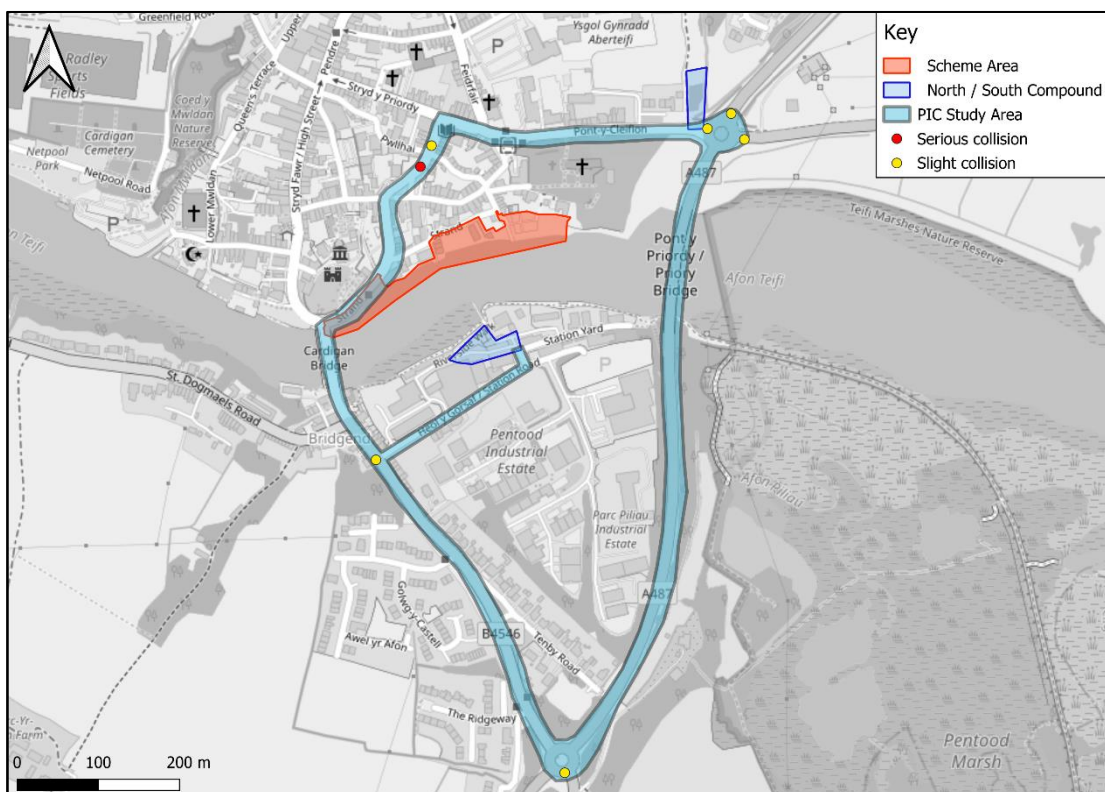
To ensure there are no underlying highway safety issues across the study area, personal injury collision (PIC) data has been analysed. The time period for the road traffic collision analysis includes the five-year period between 2019 and 2024 and is applicable to the current publicly available data from the DfT collision statistics website (DfT, 2025). ESRI ArcGIS software has been used to interrogate and map the collision locations and severity.

The extent of the study area is comprised of the Scheme Area and the surrounding road network likely to be used by construction traffic. This is illustrated in Plate 9-2.

Injuries are classified under the following categories:

- 'Slight' injury – e.g. slight shock with occurrences of sprains or bruises.
- 'Serious' injury – e.g. breakages, lacerations, concussion, or hospital admittance.
- 'Fatal' – e.g. resulted in mortality/death within 30 days after the incident.

Within the study area, there were a total of 7 collisions that occurred. Of these collisions, 6 were recorded as 'slight', and one as 'serious'. These results can be seen in Plate 9-2 and Table 9-8.

Plate 9-2 - PIC Study Area

Notably, no collisions have been identified within the immediate vicinity of the Scheme Area.

Three collisions categorised as 'slight' in severity are present at the Pont-Y-Cleifion Roundabout, which in total involved five cars and resulted in five casualties. There is no indication of common contributory factors.

While one 'serious' collision occurred within the study area, the lack of other collisions with similar nature or contributory factors suggests that no specific road design flaws are present that could be worsened by the Scheme construction. Notably, the 'serious' collision involved a singular car and did not involve any other vehicle. Given the small number of collisions over the past five years, relative to the volume of vehicle movements within the study area, and the lack of any collision clusters, no particular road safety concerns have been identified.

A summary of the recorded collisions for the five-year period is provided in Table 9-8. Detail on all incidents can be seen in the PIC report in Appendix 9.1.

Table 9-8 - Severity of PIC per year (2019-2024)

	Year of Incident						
PIC Severity	2019	2020	2021	2022	2023	2024	Total
Slight	2	1	1	0	2	0	6
Serious	0	0	0	0	1	0	1
Fatal	0	0	0	0	0	0	0
Total	2	1	1	0	3	0	7

9.8 Baseline environment and likely future evolution

This section describes the baseline environment and its likely future evolution. The current baseline environment scenario refers to the current state of environmental characteristics within the Scheme.

9.8.1 Context

Location

The site is situated in Cardigan, a small rural town near the south-west coast of Wales, situated on the border of Ceredigion and Pembrokeshire on the tidal reach of the Afon Teifi. Due to its estuarine setting, several parts of the town are at risk of coastal and river flooding, hence the need for new flood risk defences.

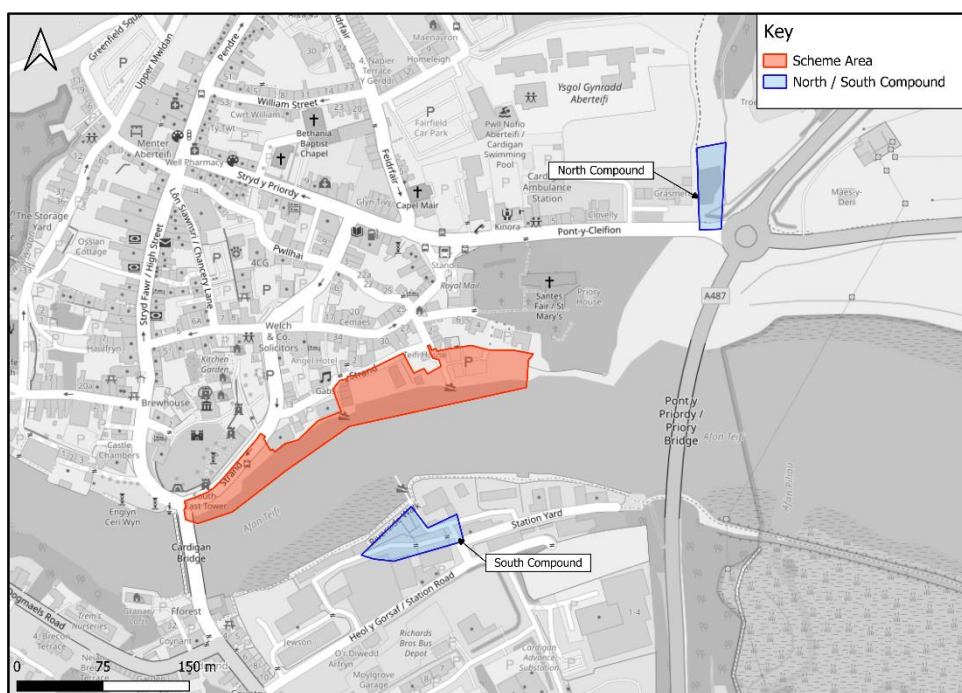


Plate 9-3 - Extent of Scheme Area and compounds

Pedestrian network

The area surrounding the site comprises mainly of residential/town centre roads with low speed limits. The surrounding highway network benefits from the provision of pedestrian footpaths and streetlighting. From the A487, the route to the Northern Compound also benefits from the provision of both single and double yellow line parking restrictions to prevent vehicles from parking on the footpaths. Additionally, there is a pedestrian crossing point provided on Pont-y-Cleifion.

Additionally, a number of the links within the study area are designated as active travel routes as part of the Cardigan Existing Route Map. These include:

- Morgan Street (CCC-CAR10-FW): comprised of footways on both sides of the carriageway and uncontrolled pedestrian crossings with tactile paving;

- Carrier's Lane (CCC-CAR10-FW): comprised of footways on both sides of the carriageway and uncontrolled pedestrian crossings with tactile paving. The western footway is separated from passing traffic by parking bays;
- Strand (CCC-CAR10-FW): comprised of footways on both sides of the carriageway and uncontrolled pedestrian crossings with tactile paving. A majority of the northern footway is separated from passing traffic by parking bays. The southern footway provides access to a bus stop;
- The B4546 (CCC-CAR11-FW): comprised of footways on one or both sides of the carriageway and uncontrolled pedestrian crossings with tactile paving. Several bus stops are accessible from both sides of the carriageway;
- The western extent of Pont-Y-Cleifion (CCC-CAR04-FW): comprised of footways on both sides of the carriageway and uncontrolled pedestrian crossings with tactile paving. Bus stops are accessible from both sides of the carriageway.

Public transport network

The closest bus stop to the Scheme Area is located on Strand, within the Scheme Area (Stop ID: cejamag), which is proposed to be temporarily closed during the construction period. This bus stop provides access to the 408 (Cardigan to Poppet Sands) service. In addition, there is a bus stop located on Bridge Street (Stop ID: cejajtm), approximately 140m from the Scheme Area. This bus stop provides access to the 408 and 430 (Cardigan and Narberth) services.

The closest bus stop to the Northern Compound is on Priory Street outside of the Cardigan Council offices (Stop ID: cejajpm), approximately 270m from the Northern Compound. The closest bus stop to the Southern Compound is the Golwg-y-castell stop (Stop ID: cejagwp) located approximately 550m from the Southern Compound.

The Priory Street stop provides access to the 408 and T5 (Haverfordwest to Aberystwyth) services. The Golwg-y-castell stop provides access to the 430 service.

Parking provision

At present, off-street parking provision is provided at Gloster Row car park, which is located within the Scheme Area and comprised of 23 car parking spaces, including one disabled parking space.

In addition, on-street parking in the form of bays is provided along Morgan Street, Carrier's Lane, and Strand. These bays are designated as short-stay parking, with a maximum stay of one hour from Monday – Saturday, 08:00 – 18:00. With the exception of the parking bays, on-street parking is restricted by single-yellow lines along Morgan Street and Carrier's Lane, and by double-yellow lines along Strand.

9.8.2 Future baseline in the absence of the Scheme

In the absence of the Scheme, the future baseline of the study area would be influenced by planned changes in land use across a wide area and any road infrastructure schemes that are already under construction or are brought forward in the future. In such a scenario, due to the nature of the land use at the location of the Scheme, the Site itself is expected to remain unchanged and therefore not change its traffic generating potential.

Land use changes would be taken into account in the future baseline by applying traffic growth, allowed for in this assessment using traffic growth factors derived from the national Trip End Model Presentation Programme (TEMPro) database, maintained by the DfT. Separate traffic growth factors have been derived for minor roads and A roads, reflecting the impact of baseline traffic growth on differing parts of the road network. The traffic growth factors that have been applied to the baseline traffic flows shown in Table 9-9.

This enables the consideration of traffic growth to future years Table 9-10 and therefore the assessment of traffic impacts associated with the Scheme can be undertaken for the anticipated construction years.

Table 9-9 - Trip End Model Presentation Programme (TEMPro) traffic growth factors

Years Factored	Road Type	Growth Factor
2024 – 2027	Minor road	1.0176
2024 - 2027	A road	1.0164
2025 - 2027	Minor road	1.0147
2025 - 2027	A road	1.0138

Table 9-10 - Baseline and Future Traffic Count

Year	Location	Baseline Data			2027 Future Year		
		HGV	All Vehs	HGV%	HGV	All Vehs	HGV%
2025	B4546	134	5491	2.4%	136	5572	2.4%
2025	Carrier's Lane / Morgan Street / Strand	24	4436	0.5%	25	4501	0.5%
2025	Pont-Y-Cleifion	122	6617	1.8%	124	6714	1.8%
2025	Station Road	102	2846	3.6%	103	2888	3.6%
2024	A487 (99777)	424	7140	5.9%	431	7257	5.9%
2024	A487 (99776)	260	8162	3.2%	264	8296	3.2%
2024	A484 (20589)	134	4211	3.2%	136	4280	3.2%

As indicated in Table 9-10, baseline HGV traffic equates to a maximum of approximately 5.9% of all traffic along the A487.

For non-motorised users, material alterations to the pedestrian, cycle, and PRow networks within the timeframe of construction of the Scheme are not anticipated.

9.8.3 Construction phase trip generation

During the construction phase of the Scheme, transport impacts may arise from an increase in traffic resulting from deliveries of construction materials and movement of construction staff. Although there is intention to consolidate deliveries where possible and maximise the use of sustainable modes for workers and encourage car sharing, there would inevitably be road-based movements. Such movements may impact the local highway network and its users. Table 9-11 outlines the anticipated trip generation for the duration of the construction programme.

Table 9-11 - Daily trip generation throughout construction programme

Vehicle	Month of Construction																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Daily HGVs	7	11	11	11	11	11	6	1	7	8	2	2	3	10	19	19	16	8
Daily Staff Vehicles	9	9	9	12	12	12	12	12	36	36	36	36	36	36	36	36	24	11
Daily All Vehicles	16	20	20	23	23	23	18	13	43	44	38	38	39	46	55	55	40	19

9.8.4 Anticipated traffic routes

The proposed access route to the northern side of the Afon Teifi would follow the A487 onto Pont-Y-Cleifion via the roundabout, and down Morgan Street and Carrier's Lane to reach Strand. This route has been selected as it passes the Northern Compound area and allows for transit towards the Scheme Area. The proposed access route to the southern side of the Afon Teifi (i.e. Southern Compound area) would follow the A487 onto the B4546 via the roundabout, and down onto Station Road. This is illustrated in Plate 9-4.

The proposed egress route from the Scheme Area would follow Strand onto the B4546 via Cardigan Bridge (Castle Street), then onto the A487. The proposed egress route from the Northern Compound would begin at the A487/Pont-Y-Cleifion roundabout and follow the A487. The proposed egress route from the Southern Compound would follow Station Road onto the B4546 to the A487/B4546 roundabout. This is illustrated in Plate 9-5.

The proposed access route from the Northern Compound to the Scheme Area would be via Pont-Y-Cleifion, Morgan Street, and Carrier's Lane to reach Strand. The proposed access route from the Scheme Area to the Northern Compound would be via Strand, the B4546, the A487, and then exit at the A487/Pont-Y-Cleifion roundabout. This is illustrated in Plate 9-6.

The proposed access route from the Southern Compound to the Scheme Area would be via Station Road, the B4546, the A487, then onto Pont-Y-Cleifion via the roundabout, and down Morgan Street and Carrier's Lane to reach Strand. The proposed access route from the Scheme Area to the Southern Compound would be via the B4546 and Station Road. This is illustrated in Plate 9-6.

There may also be an element of inter-compound trips between the Northern and Southern Compounds. It is anticipated that vehicles making these trips would use the A487, B4546, and Station Road.

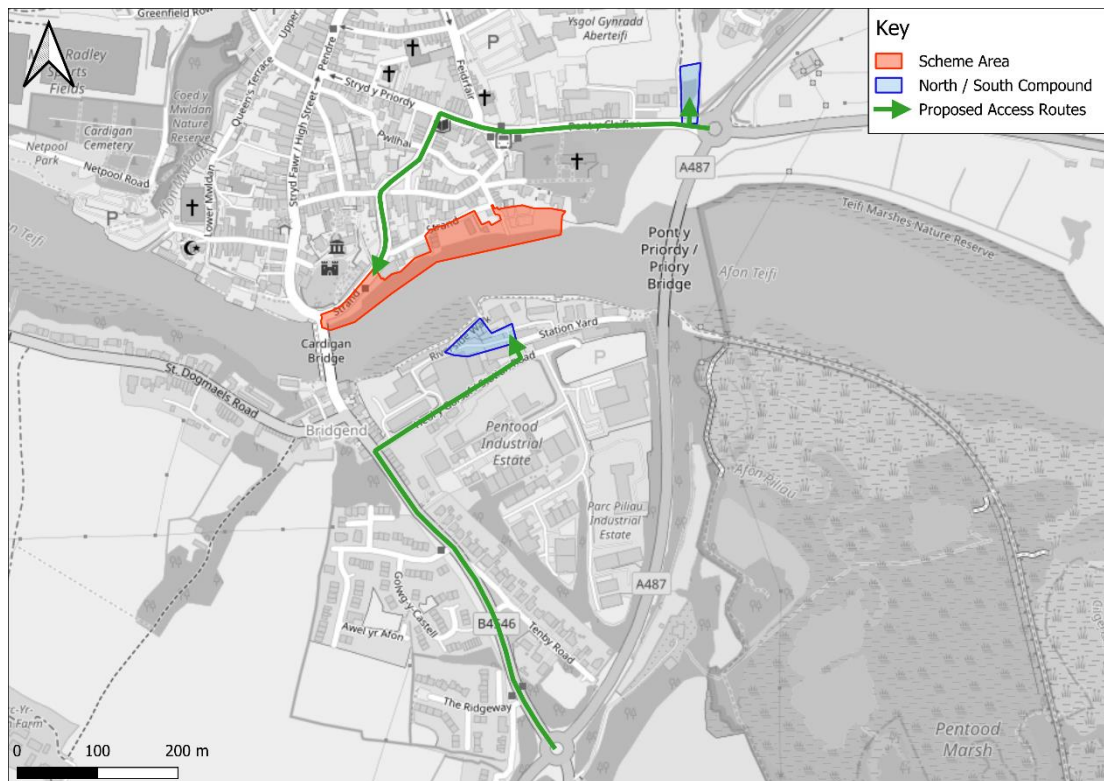


Plate 9-4 - Proposed traffic routes (access)

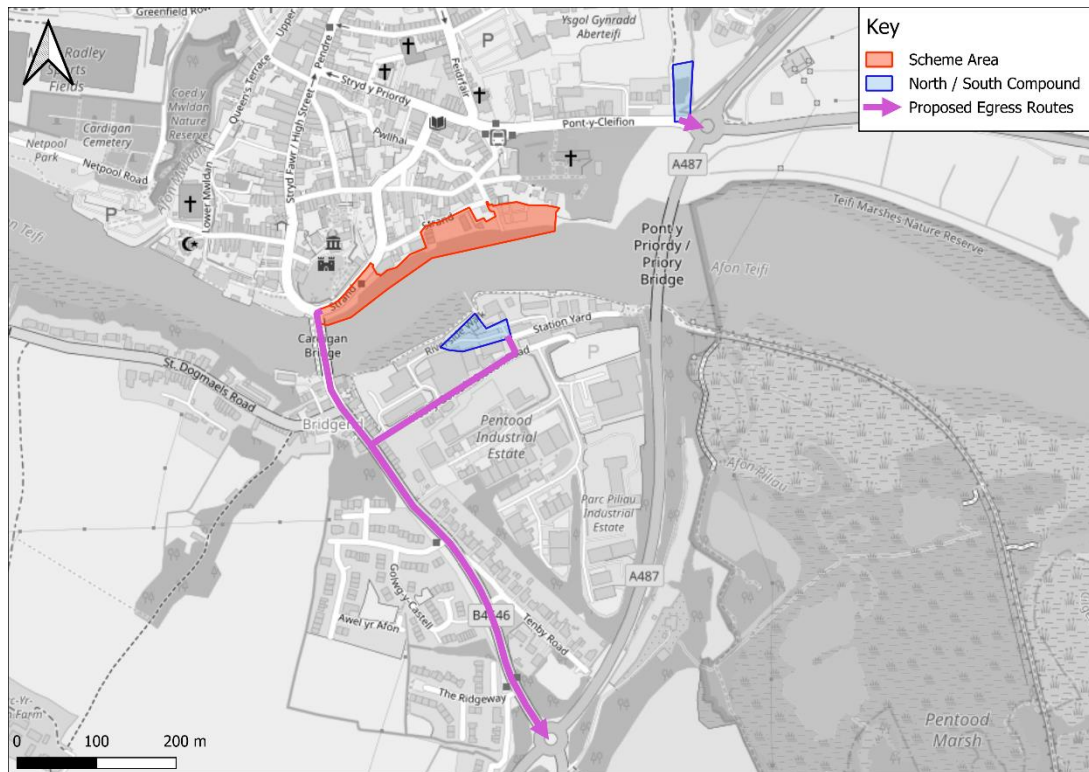


Plate 9-5 - Proposed traffic routes (egress)

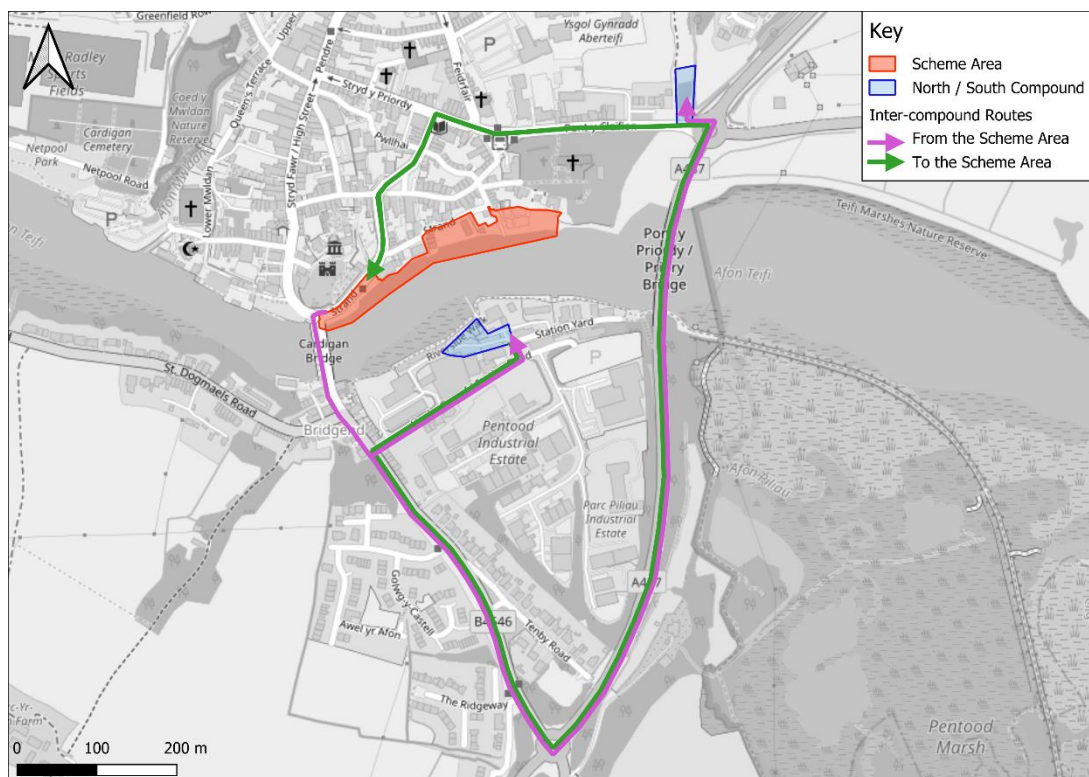


Plate 9-6 - Proposed traffic routes (between Scheme Area and compounds)

9.8.5 Character

The environment under consideration is defined by its central town location, coastal vulnerability, and multi-functional land use, all of which contribute to its distinctive character and influence the traffic and transport dynamics of the area.

The site is characterised by a one-way system that connects the north-eastern entry points of the site with the central river front, High Street, and the south of the town. The network supports a mixture of vehicular, pedestrian, and public transport movements, with the 408-bus route serving the town through the affected area. The surrounding mixed-use creates an active and sensitive environment, where traffic flow, access, and parking, can have wide-reaching impacts on daily life, business operations, and public services. The estuarine position is a defining characteristic of Cardigan and is the reasoning for the new development of flood defences with raising concerns about the flood risk to this region. This environmental pressure underscores the strategic importance of the Scheme.

The site acts as a transport and community focal point, linking key parts of the town and supporting a range of activities. Its centrality and connectivity mean that any disruption – such as road closures or parking restrictions – would have a ripple effect across the town's transport system and community functions.

9.8.6 Significance

Due consideration to the transport environment within the study area is given, owing to its strategic location, functional role, and the presence of sensitive receptors. The assessment of significance considers the quality, value, and designation of the existing infrastructure and its contribution to the wider community and regional connectivity.

The site is centrally located within the town of Cardigan, a key settlement in the Ceredigion region. The local highway network, including Strand, Carrier's Lane, Morgan Street, and the A487 trunk road, forms a critical part of the town's transport infrastructure. These roads facilitate movement within the town centre and provide regional connectivity to Aberystwyth, Fishguard, and Carmarthen. The A487 is a designated strategic route and serves as the primary corridor for freight, public transport, and general traffic. Its role in supporting economic activity and access to services elevates its significance within the transport network.

The transport environment supports a diverse mix of land uses, including residential, commercial, tourism, and public services. Commercial units such as Cardigan Bathroom Centre and Cardigan Bay Active rely on accessible road links and parking provision to maintain footfall and operational viability. Residential areas and community facilities, including schools and healthcare services, depend on safe and reliable transport routes for daily activity and emergency access. The presence of the 408-bus route and associated stops further enhances the significance of the area, providing essential public transport services to residents and visitors. Temporary disruption to these services during construction may disproportionately affect vulnerable groups, including the elderly and those without access to private vehicles.

The combination of strategic connectivity, community reliance, and environmental vulnerability underscores the high significance of the transport environment within the study area. This significance informs the assessment of potential impacts and the prioritisation of mitigation measures.

9.8.7 Sensitivity

The sensitivity of the transport environment has been assessed in accordance with professional judgement and guidance from IEMA (IEMA, 2023). Sensitivity is defined as the degree to which a receptor is likely to be affected by changes in traffic flows, accessibility, or transport infrastructure.

The receptors outlined in Table 9-4 have been classified as having negligible, low, medium or high sensitivity based on their characteristics, vulnerability and functional importance. The classification considers factors such as pedestrian activity, proximity to construction works, reliance on public transport and the presence of vulnerable users. Where vulnerable users are present, the impact on sensitivity is determined by factors such as concentration (locations such as care homes or schools would have a higher concentration), proximity to the highway frontage of the link, and quality of the pedestrian infrastructure along the link (higher quality infrastructure may mean that vulnerable users are less sensitive). The receptor classification can be seen in Table 9-12 which sets out the links within the study area and which receptor types are apparent along them.

Table 9-12 - Link Sensitivity within the Study Area

Link	Receptor(s) present	Justification	Sensitivity
Strand	Non-motorised users Road Users Sensitive and/or Vulnerable users	Strand has a limited number of non-residential properties fronting the carriageway, as well as pedestrian footways present on both sides of the road. Strand is a designated active travel route.	Medium
Carrier's Lane	People at home Non-motorised users Road users Sensitive and/or Vulnerable users	Carrier's Lane has a number of residential properties fronting the carriageway, as well as pedestrian footways present on both sides of the road. Carrier's Lane is a designated active travel route.	Medium
Morgan Street	People at home Non-motorised users Road users Sensitive and/or Vulnerable users	Morgan Street has a number of residential properties fronting the carriageway, as well as pedestrian footways present and car parking areas on both sides of the road. Morgan Street is a	Medium

Link	Receptor(s) present	Justification	Sensitivity
		designated active travel route.	
Pont-Y-Cleifion	People at home Sensitive locations Non-motorised users Recreational areas Road users Sensitive and/or Vulnerable users	Pont-Y-Cleifion has a number of residential properties fronting the carriageway along with Saint Mary's Church, pedestrian footways and crossing points and bus stops on both sides of the road	Medium
B4546	People at home Non-motorised users Road users Sensitive and/or Vulnerable users	The B4546 has several residential properties fronting the carriageway, as well as pedestrian footways along both sides of the road. The B4546 is a designated active travel route.	Medium
Station Road	People at home People at work Non-motorised users Road users	Station Road has a number of residential and industrial properties fronting the carriageway. No pedestrian footways present.	Medium
A487	Road users	High-capacity road with limited direct impact. No sensitive receptors present	Negligible

9.9 Assessment of effects

The construction phase is set to be temporary across an 18-month period. However, construction traffic associated with the Scheme could have an effect on the following matters:

- Severance
- Driver delay
- Pedestrian delay
- Non-motorised user amenity

- Road safety
- Hazardous/Large loads

Construction activities that may result in impacts to the study area are listed below:

- Construction works within the highway
- Movement of the construction workforce to and from the site
- Movement of materials and construction equipment to and from the site

9.9.1 Screening

Table 9-13 sets out the peak construction daily two-way (or one-way for one-way links) trips by link section, as outlined previously in this chapter, as well as the net and percentage change from the addition of construction flows. Based on this change, the table refers to whether the link is included or excluded from further assessment for environmental effects. It should be noted that 'All Vehicles' in this table equates to cars, light good vehicles (LGVs), and heavy goods vehicles (HGVs).

Table 9-13 - Construction scenario daily two-way trips (or one-way trips for one-way links) (absolute and percentage change)

Link no.	Link Name	2027 Future Baseline		Construction traffic		% change with addition of construction traffic		Included or excluded from the assessment based on IEMA Guidance Rule 1 and 2
		All Vehicles	HGV	All Vehicles	HGV	All Vehicles	HGV	
1	A487, south of A487/B4546 roundabout	3836	263	36	19	1.43%	7.22%	Excluded
2	A487, between A487/Pont-Y-Cleifion roundabout and A487/B4546 roundabout)	7257	431	36	19	0.76%	4.41%	Excluded
3	A487, north of A487/Pont-Y-Cleifion roundabout	8296	264	36	19	0.66%	7.19%	Excluded
4	Pont-Y-Cleifion	6714	124	29	15	0.66%	12.24%	Excluded

Link no.	Link Name	2027 Future Baseline		Construction traffic		% change with addition of construction traffic		Included or excluded from the assessment based on IEMA Guidance Rule 1 and 2
		All Vehicles	HGV	All Vehicles	HGV	All Vehicles	HGV	
5	Morgan Street / Carrier's Lane / Strand	4501	25	29	15	0.98%	61.90%	Included
6	B4546	5572	136	36	19	0.99%	13.99%	Excluded
7	Station Road	2888	103	7	4	0.38%	3.69%	Excluded

The results in Table 9-13 demonstrate that during the construction of the Scheme, the 'All Vehicle' or 'HGV' daily two-way trips are not predicted to increase by more than 30% across all but one link. The receptor sensitivity on these links varies as a result of residential properties/other sensitive receptors, however, owing to the small increase in daily two-way trips on these links, it is predicted that potential significant effects would not arise during construction.

For these links, as per IEMA Rule 1 and 2, it is considered that any increase in total traffic of less than 30% is imperceptible. Furthermore, forecast increases in total traffic of less than 10% result in no discernible environmental effect. As such, a detailed environmental assessment of traffic and transport is not required as all potential resultant effects associated with construction traffic would be considered negligible and not significant.

Notably, Morgan Street / Carrier's Lane / Strand is the exception to this. Whilst the 'All vehicle' movements on this link are only anticipated to increase by 0.98%, an increase of 62% of HGV movements is predicted. Consequently, as per IEMA rule 1, this link should be included for detailed environmental assessment.

However, it should be noted that this percentage increase is a result of very low recorded baseline HGV movements along this link, 25 per day. In the context of low baseline HGV movements, proportional (%) impacts can be overstated and so the absolute impact should instead be used as a reference for magnitude of change.

In the case of Morgan Street / Carrier's Lane / Strand, an additional 15 HGVs movements per day are anticipated. Assuming a fixed rate of HGV movements, during the winter months (the average winter working hours are more compressed than summer therefore a higher number of HGVs per hour), the daily working hours would be 08:00-16:30, which is equivalent to ~2 trips per hour, or one HGV trip every 34 minutes. This is considered to be imperceptible and would not result in any likely significant effects upon the baseline environment. As a result, no detailed environmental assessment of Morgan Street / Carrier's Lane / Strand is proposed.

Furthermore, it should be considered that Table 9-13 highlights the peak impact of the construction programme; impact would be considerably lower across much of the 18-month programme.

9.9.2 Construction

As part of the construction of the Scheme, the partial road closure of Strand would be implemented. The approximate area of this partial road closure is displayed in Plate 9-7.



Plate 9-7 - Extent of road closure, parking restriction, and bus stop closure

Plate 9-7 shows the area of Strand that would be impacted by closures. The nearside lane would be closed for the duration of construction which would result in the bus stop (Stop ID: cejamag) on this road being closed during the construction phase. Additionally, the on-street parking in the offside lane of Strand would be closed during the construction phase; this would allow cars to continue to be able to travel along Strand connecting to Bridge Street and Cardigan Bridge (Castle Street), rather than prohibiting traffic flow entirely.

In addition to the impacts at Strand, the Gloster Row car park located to the east would also be closed during the construction phase, but access to properties would be maintained.

An outline Construction Traffic Management Plan (oCTMP) is submitted in support of the planning application (see Appendix 9.2). The oCTMP provides a framework of the construction traffic routing, site access, delivery of materials, construction working hours and management and monitoring measures.

The oCTMP would be implemented, developed into a final CTMP, and managed by the Principal Contractor undertaking the construction works and sets out measures to avoid, minimise or mitigate the environmental effects of traffic during construction and would limit the impact on existing users of the public highway network or those located close to it.

The aim of the final CTMP is to outline the specific transport impacts arising from the construction works and to provide a framework for addressing these impacts. The CTMP only considers the construction phase of the Scheme and has been prepared to ensure that the

construction process and management and mitigation measures, including temporary diversions and construction vehicle management, minimise the impact on the existing users of the public highway network.

The CTMP includes procedures to mitigate against traffic and transport related impacts and includes procedures to manage movement of workers and HGVs, ensuring continued monitoring, review and improvement of the CTMP and associated mitigation measures put in place. It also outlines the routing strategy for the Scheme construction traffic, conditions survey requirements and onsite construction activities (wheel washing etc).

9.9.3 Operational trips (scoped out)

Given the nature of the Scheme, operational trips are expected to be negligible. An estimate of the operational flows and consideration to thresholds within the IEMA guidance is noted below.

As well as routine maintenance there may also be a requirement to repair and replace components on site as part of maintaining the Scheme during the operational phase. This could require the use of HGVs. Certainty of the number of HGVs required for these works is not known at this stage, given the extent of any repair and replacement works is unknown. However, as traffic flows are not expected to exceed the IEMA guidance Rule 1 criteria, *"Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)"*, an operational traffic assessment is not required in accordance with the Scoping Opinion. In addition, such works would not be undertaken frequently.

9.9.4 Opportunities for enhancement

The following opportunities for environmental enhancement in relation to traffic and transport have been identified:

- The public realm improvements and widening of the pavement at Area 1 would improve access and safety for pedestrians and users of the bus stop.
- A review of road signage at the junction of Strand, Castle Street and Bridge Street may lead to improved visibility on the junction.
- A review of street lighting on Strand in Area 1 could lead to an improvement in visibility for both pedestrians and motorists.

9.10 Mitigation measures

As detailed in Section 9.9.2, an oCTMP has been produced (see Appendix 9.2), which would be developed into a final CTMP by the Principal Contractor prior to commencement of construction.

9.11 Significance and duration of residual effects

No significant effects have been identified therefore an assessment of residual effects has not been undertaken.

9.12 Monitoring

To ensure that the impact of traffic and transport is controlled, the construction phase shall be audited against the requirements of the oCTMP by the Principal Contractor to ensure adherence.

9.13 Difficulties and uncertainties

Traffic surveys record daily or weekly flows, rather than constant recording. Therefore, data are considered a snapshot of road network behaviour inclusive of flows, turning movements and speed. However, it is not considered that this impacted the Applicant's ability to undertake the assessment presented in this chapter, nor has it affected the conclusions of the assessment, as this has been addressed by ensuring any analysis is conducted as a robust assessment scenario.

9.14 Summary of assessment

A summary of this assessment is presented in Table 9-14. the sensitivity of each receptor is identified alongside and the potential effects that could arise on those receptors. Any proposed additional mitigation measures are stated and the magnitude of change and residual effects then assessed. Finally, any monitoring requirements are stated where applicable.

Table 9-14 - Summary of likely traffic and transport effects

Receptor/Matter	Phase	Sensitivity	Potential effects	Magnitude of change	Monitoring requirement
A487	Construction	Negligible	All effects are considered to be negligible and not significant: Severance Driver delay Non-motorised user delay Non-motorised user amenity Fear & Intimidation Road safety Hazardous/large loads	Screened out/Negligible	Ongoing monitoring of construction traffic and staff travel matters would be undertaken in accordance with the Construction Traffic Management Plan
Pont-Y-Cleifion	Construction	Medium			
Morgan Street	Construction	Medium			
Carrier's Lane	Construction	Medium			
Strand	Construction	Low			
B4546	Construction	Medium			
Station Road	Construction	Medium			
All road users	Operation	Negligible	-	-	-

9.15 References

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